212 Impact of enteral tube feeding on body fat and lean body mass

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Objectives: Enteral tube feeding (ETF) has known benefits, improving weight and stabilising lung function in adult patients with CF. The aim of this study was to examine how weight gain is achieved through measurement of fat deposition before and after initiation of ETF.
Methods: 6 patients fulfilled the study criteria, having undergone measurement of body composition [DEXA] 1 year prior to staring ETF and up to 18 months post ETF. Percentage change in weight (kg), body fat (%), lean body mass (kg), gynoid fat (%) and android fat (%) were recorded.
Results: 6 patients [3M/3F], aged 17.7–33.0 years were eligible to participate. Body mass index at start ETF was 14.7–24.8 kg/m^2. Fat deposition in the year after enteral feeding achieved up to 340% increase. Android (central fat) deposition was consistently greater than gynoid fat. 50% of cases had a reduction in lean body mass after start of enteral tube feeding, despite only one case displaying weight loss over this period.

Table 1

Case	Weight change with ETF	%fat		% android fat		% gynoid fat		% lean body mass	
		pre/post ETF	% change	pre/post ETF	Change	pre/post ETF	Change	pre/post ETF	Change
1	31.7%	7.30/10.0	37%	7.70/12.10	57%	12.60/16.90	15.9%	35.60/45.40	27.5%
2	1.9%	10.2/15.5	50.1%	12.8/19.10	49.2%	18.20/26.00	43%	41.50/39.00	−6%
3	−12.8%	34.40/32.10	−6.6%	39.40/33.70	−14.5%	44.80/44.90	0	34.80/31.60	−9.2%
4	17.4%	21.00/30.00	42.8%	16.80/30.10	79.2%	38.30/48.00	25%	33.00/34.70	5.1%
5	8.2%	24.20/35.3	45.9%	26.70/38.30	43.4%	36.90/40.90	10.8%	37.30/33.70	−9.7%
6	35.5%	6.20/27.30	340%	5.30/29.10	449%	10.60/38.70	265%	46.50/48.60	4.5%

Conclusion: In a case series of adults with CF, ETF resulted in 37–340% gain in body fat in all 5 of 6 patients who gained weight. This was predominantly as android fat, a predictor of Type 2 diabetes in the general population. ETF is a known risk factor for cystic fibrosis related diabetes and prompts further evaluation of nutritional practice in CF.

213 Dietary management of pregnant women with cystic fibrosis

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Objectives: In CF pregnant women, weight gain is essential for foetal growth and for maintaining maternal health. Diabetes is also associated with poorer prognosis. Optimizing nutrition and diabetes care in CF pregnant patients requires careful dietary monitoring. The aim of our study was to evaluate the dietary management of CF during pregnancy.
Methods: We reviewed the medical and dietary records from 30 patients cared at our adult CF centre during pregnancy between 2008 and 2013.
Results: Before pregnancy, median age was 28.5 years (range, 20–38), mean BMI 20.4±2.6 kg/m^2, mean FEV1 61±15% pred. 23 (77%) patients had pancreatic insufficiency and 10 (33%) had diabetes. Two more patients developed gestational diabetes. The mean number of dietician visits during pregnancy was 2.5 (0–6). During initial assessment, specific issues regarding quantitative and qualitative nutritional needs during pregnancy were addressed. At each visit, solutions were proposed in case of difficulties (poor appetite, nausea, vomiting, and weight loss), vitamin and mineral (calcium, iron) deficiencies were corrected, and diabetes was monitored. We recommended splitting food (3 meals/d + snacks) and enrichment with common food (e.g., butter, milk powder). 14 patients (53%) received oral nutritional supplements and 3 had enteral nutrition. All patients gained weight (mean 7.2±4.2 kg) during pregnancy. After delivery, 7 patients had lost weight compared to the previous year. Mean birth weight was 2999±490 g. The mean gestational age at delivery was 38.1±1.9 weeks.
Conclusion: The dietician should assess and counsel women at the CF centre to achieve optimal nutritional status throughout pregnancy.

214 Cystic fibrosis and pregnancy, a single centre case–control study

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Objectives: More women with CF are expected to become pregnant, due to their increased survival and to advances in Assisted Reproductive Technology (ART). We compared the maternal and perinatal outcomes of pregnancies in women with CF and women in the general population.
Methods: In this retrospective case–control study, CF women cared at our adult CF centre who delivered in our maternity ward from December 2000 to December 2013 were matched each to two controls. The primary endpoint was the median term of delivery and secondary endpoints were the maternal and perinatal outcomes.
Results: 33 pregnancies in 30 women with CF were compared to 66 pregnancies in controls (median age 28.8 vs 32.1 years; $p < 0.003$). The median term of delivery was similar in the two groups (38.1±1.6 WG vs 38.4±1.1 WG; $p = 0.28$). ART pregnancies were more frequent in CF women (51% vs 3%, $p < 0.003$). In CF women, the initial BMI was lower (19.5 vs 22.4 kg/m^2; $p = 0.001$) and pre-existing diabetes was more frequent (30% vs 3%; $p < 0.001$). Those differences persisted during pregnancy for weight gain (9.1±7.1 kg vs 13.2±6.4 kg; $p < 0.001$), gain of more than 10 kg (36% vs 65%; $p = 0.009$) and diabetes (51% vs 8%; $p < 0.001$). Spontaneous labour and spontaneous vaginal deliveries were less frequent in CF than in controls (respectively 45% vs 70%, $p = 0.002$; 51% vs 70%, $p = 0.11$). There was an equal number of caesarean sections (24% vs 22%; $p = 0.80$). Foetal outcome was similar in both groups, including birth weight (3042±91 g vs 3119±92 g, $p = 0.30$).
Conclusion: Multidisciplinary care of pregnancy in women with CF resulted in maternal and perinatal outcomes similar to those of women in the general population.

215 Hand grip strength is associated with disease severity in adults with CF

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Objectives: Hand grip strength (HGS), as an assessment of peripheral muscle function, has been used as a surrogate marker for nutritional status in conditions where body mass index (BMI) is unreliable due to changes in fluid status (such as renal and liver disease). Reduced HGS has been shown to predict post-operative complications in surgical patients (Klidjian, 1982). Since its utility in CF management has not been examined, we set out to determine whether HGS might correlate with disease severity in an adult CF cohort.
Methods: We performed HGS in 201 sequential CF patients attending for annual review at Papworth Hospital, UK. HGS, measured using a standardised protocol, was compared to clinical features (age, gender, BMI and FEV_1% predicted) and a marker of overall disease severity (the UK CF Trust banding status where band 1 is a the least severe and band 5 the most severe disease).
Results: Mean HGS values obtained for adults with CF were significantly lower than age-matched healthy reference values. HGS reference values for healthy individuals ranged from 18.9–46.1 kg (females) and 22.9–68.7 kg (males). Mean HGS values obtained in this study were 22.0±5.27 kg for females and 36.5±9.68 kg for males. 63% of female and 44% of male CF patients had HGS <85% of normal reference values. When stratified for clinical disease severity there was a significant difference in HGS between the most severe and least severe groups ($p = 0.04$).
Conclusion: HGS in CF adults is significantly reduced compared to healthy reference values and declines with worsening clinical status. HGS may be a useful additional test to assess nutritional status and disease severity.